

Optical and transport properties in pnictides: anomalous effects due to interband interactions

Thursday, 26 July 2012 17:30 (25 minutes)

Lara Benfatto
ISC-CNR

The occurrence of superconductivity in pnictides renewed in the last year the interest in the physics of multiband superconductors. However, what makes the case of pnictides very peculiar is the fact that interactions have mainly an interband character, as due to exchange of spin fluctuations between hole and electron pockets. These two characteristics make the theoretical description of pnictides much more involved than what is usually believed, forcing us to revise our standard paradigms for correlated electron systems. In this talk I will review some of our recent results based on a multiband model with retarded interactions treated within Eliashberg theory. In particular I will discuss the redistribution of spectral weight between coherent and incoherent optical processes, that leads to an anomalous temperature dependence of the sum rule. I will also show that when the momentum dependence of the interaction is taken into account explicitly the vertex corrections to the quasiparticle current lead to a predominant hole or electron character of the transverse conductivity, explaining the experimental results on the Hall effect.

Primary author: BENFATTO, Lara (ISC-CNR and Department of Physics, Sapienza University of Rome)

Presenter: BENFATTO, Lara (ISC-CNR and Department of Physics, Sapienza University of Rome)

Session Classification: High Tc Cuprates & Pnictides

Track Classification: Pnictides